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09/592,013	06/12/2000	Hiroaki Yukawa	450100-02469	4202

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EXAMINER	
LE, KIMLIEN T	
ART UNIT	**PAPER NUMBER**
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DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/592,013	Applicant(s) YUKAWA, HIROAKI	
	Examiner Kimlien T Le	Art Unit 2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,9-13,15-19 and 21-25,27-29* is/are rejected.

7)☒ Claim(s) *2,8,14,20 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 7.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments filed on March 24, 2004 have been fully considered but they are not deemed to be persuasive.

Applicant asserts on page 13:

"Contrary to the `674 patent's teaching, independent claims 1, 7, 13 and 19 call for the diffraction grating to have a plurality of slits whose depth is preselected such that the efficiency of diffraction of first order light of a first light beam of greater wavelength is higher that the efficiency of diffraction of first order light for a second light beam having a shorter wavelength."

The Examiner maintains that Mori et al. (U.S. Patent 5,717,674) discloses the diffraction grating to have a plurality of slits whose depth is preselected such that the efficiency of diffraction of first order light of a first light beam of greater wavelength is higher that the efficiency of diffraction of first order light for a second light beam having a shorter wavelength (Fig. 2; See also column 8,lines 38-65).

Applicant asserts on page 14:

"There is no disclosure or suggestion in Brazas, Jr. of a diffraction grating having a plurality of slits whose depth is preselected such that the efficiency of diffraction of first order light of a first light beam of greater wavelength is higher than the efficiency of diffraction of first order light for a second light beam having a shorter wavelength as claimed by applicant in claims 1, 7, 13, 19 and 25 upon which claims 4-6, 10-12, 16-18, 22-14 and 26-29 ultimately depend. Since both the Mori, et al. and Brazas, Jr. references both lack this feature, any conceivable combination thereof would also not teach or suggest applicants' claimed invention of claims 4-6, 10-12, 16-18, 22-24 and 25-29."

The Examiner maintains that Mori et al. (U.S. Patent 5,717,674) discloses the diffraction grating to have a plurality of slits whose depth is preselected such that the efficiency of

diffraction of first order light of a first light beam of greater wavelength is higher that the efficiency of diffraction of first order light for a second light beam having a shorter wavelength (Fig. 2; See also column 8,lines 38-65).

Objections

2. Claim 6 is objected to because of the following informalities: "photographer" should be --photodetector--. Appropriate correction is required.

Allowable Subject Matter

3. Claims 2,8,14, 20 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is an examiner's statement of reasons for allowance:

In claim 2, 8, 14, 20 and 26, the limitation of the an optical head , wherein the depth of the slits formed in the diffraction grating is selected so that the efficiency of diffraction of first-order light when the first light beam is incident upon the diffraction grating is higher than 5% while the efficiency of diffraction of first-order light when the second light beam is incident upon the diffraction grating is lower than 5% ,taken in conjunction with the limitations of claim 1, 7, 13 ,19 or 25, is not anticipated, nor made obvious over the prior art of record.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3, 7,9,13,15,19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Mori et al. (U.S. Patent 5,717,674).

With regard to claim 1, Mori et al. shows an optical head comprising: a light emitter/detector for emitting a laser light towards a recording surface of an optical disc having information optically recorded thereon and detecting a return light component of the laser light reflected at the recording surface of the optical disc to detect at least a tracking error signal (Fig. 1, elements 1,2; See column 8, lines 25-30); a diffraction grating provided between the light emitter/detector and the optical disc to split the laser light emitted from the light emitter/detector into at least three beams(Fig.1 , element 3; See column 8, lines 25-30); a light converging optical system provided between the diffraction grating and optical disc to converge the lights split by the diffraction grating to the recording surface of the optical disc (Fig. 1, element 5; See column 10, lines 15-20); the light emitter/detector comprising a first light source to emit a first light beam and a second light source to emit a second light beam of a second wavelength which is less than said first wavelength; and the diffraction grating having formed therein a plurality of slits whose depth is predetermined so that the efficiency of diffraction of first-order light generated when the first light beam is incident upon the diffraction grating is higher than that of the

efficiency of diffraction of first order light generated when the second light beam having the second wavelength is incident upon the diffraction grating (Fig.2 ; See column 8, lines 40-55).

With regard to claims 3,9,15 and 21, Mori et al. shows an optical head as set forth in claim 1, wherein: the first light beam has a wavelength of approximately 785 ± 25 rim; and the second light beam has a wavelength of approximately 655 ± 25 nm (column 12, lines 10-25).

With regard to claim 7, Mori et al. shows an optical recording and/or reproducing apparatus comprising: means (inherent) for rotating an optical disc (CD) having information recorded thereon (inherent); an optical head (inherent) to emit a light towards a recording surface of the optical disc and to detect a return light from the optical disc; and a signal processing circuit (inherent) to process a signal detected by the optical head; the optical head comprising: a light emitter/detector for emitting a laser light towards a recording surface of an optical disc having information optically recorded thereon and detecting a return light component of the laser light reflected at the recording surface of the optical disc to detect at least a tracking error signal (Fig. 1, elements 1,2; See column 8, lines 25-30); a diffraction grating provided between the light emitter/detector and the optical disc to split the laser light emitted from the light emitter/detector into at least three beams(Fig.1 , element 3; See column 8, lines 25-30); a light converging optical system provided between the diffraction grating and optical disc to converge the lights split by the diffraction grating to the recording surface of the optical disc (Fig. 1, element 5; See column 10, lines 15-20); the light emitter/detector comprising a first light source to emit a first light beam and a second light source to emit a second light beam of a second wavelength which is less than said first wavelength; and the diffraction grating having formed therein a plurality of slits whose depth is predetermined so that the efficiency of diffraction of first-order light generated

when the first light beam is incident upon the diffraction grating is higher than that of the efficiency of diffraction of first order light generated when the second light beam having the second wavelength is incident upon the diffraction grating (Fig.2 ; See column 8, lines 40-55).

With regard to claim 13, Mori et al. shows an optical head comprising:a first light source (Fig. 1, elements 2; See column 8, lines 25-30) to emit a first light beam of a first wavelength; a second light source (Fig. 1, elements 1; See column 8, lines 25-30)spaced a predetermined distance from said first light source to emit a second light beam having a second wavelength which is less than said first wavelength;

a diffraction grating provided between the first/second light sources and an optical disc to split the laser light emitted from the first light source or second light source into at least three beams; and a diffraction grating provided between the light emitter/detector and the optical disc to split the laser light emitted from the light emitter/detector into at least three beams(Fig.1 , element 3; See column 8, lines 25-30); a light converging optical system provided between the diffraction grating and optical disc to converge the lights split by the diffraction grating to the recording surface of the optical disc (Fig. 1, element 5; See column 10, lines 15-20); wherein the diffraction grating having formed therein a plurality of slits whose depth is predetermined so that the efficiency of diffraction of first-order light generated when the first light beam having the second wavelength is incident upon the diffraction grating is higher than that when the second light beam is incident upon the diffraction grating (Fig.2 ; See column 8, lines 40-55).

With regard to claim 19, Mori et al. shows an optical recording and/or reproducing apparatus comprising: means (inherent) for rotating an optical disc (CD) having information recorded thereon (inherent); an optical head (inherent) to emit a light towards a recording surface

of the optical disc and to detect a return light from the optical disc; and a signal processing circuit (inherent) to process a signal detected by the optical head; the optical head comprising: a first light source (Fig. 1, elements 2; See column 8, lines 25-30) to emit a first light beam of a first wavelength; a second light source (Fig. 1, elements 1; See column 8, lines 25-30) spaced a predetermined distance from the first light source to emit a second light beam having a second wavelength which is less than the first wave length; a diffraction grating provided between the first/second light sources and an optical disc to split the laser light emitted from the first light source or second light source into at least three beams; and a diffraction grating provided between the light emitter/detector and the optical disc to split the laser light emitted from the light emitter/detector into at least three beams(Fig.1 , element 3; See column 8, lines 25-30); a light converging optical system provided between the diffraction grating and optical disc to converge the lights split by the diffraction grating to the recording surface of the optical disc (Fig. 1, element 5; See column 10, lines 15-20); wherein the diffraction grating having formed therein a plurality of slits whose depth is preselected so that the efficiency of diffraction of first-order light generated when the first light beam having the first wavelength is incident upon the diffraction grating is higher than that when the second light beam having the second wavelength is incident upon the diffraction grating (Fig.2 ; See column 8, lines 40-55).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-6, 10-12, 16-18, 22-24 and 25, 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (U.S. Patent 5,717,674) in view of Brazas, Jr. et al. (U.S. Patent 5,696749)

With regard to claims 4,10,16 and 22, Mori et al. shows all the features as described in claim 4, except that the first and second light sources and a photodetector detects a return light component of the laser light reflected at the optical disc are mounted on a semiconductor substrate. However, Brazas, Jr. et al. teaches an integrated optical element having a first and second light sources (Fig. 9, elements 40, 40a; See column 6, lines 55-60) and a photodetector on the same substrate (Fig. 9, element 68; See column 7, lines 1-6) detects a return light component of the laser light reflected at the optical disc are mounted on a semiconductor substrate (Figs 9 and 10) for the purpose of easier to assemble smaller optical head. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide Mori et al. with an integrated optical element having a first and second light sources and a photodetector mounted on a semiconductor substrate as taught by Brazas, Jr. et al such modification is well established in the art as an integration of elements as shown in Fig. 12 of Mori et al. Therefore, one of ordinary skill in the art at the time of the invention would have been motivated to provide Mori et al. with the first and second light sources and a photodetector mounted on a semiconductor substrate as taught by Brazas, Jr. et al., for the purpose of easier to assemble smaller optical head.

With regard to claim 25, Mori et al. shows an optical head for emitting a laser light and detecting a return light component of the laser light, comprising: a first light source (Fig. 1,

elements 2; See column 8, lines 25-30) to emit a first light beam; a second light source (Fig. 1, elements 1; See column 8, lines 25-30) spaced a predetermined distance from said first light source to emit a second light beam having a shorter wavelength than the first light beam; a diffraction grating provided between the first/second light sources and an optical disc to split the laser light emitted from the first light source or second light source into at least three beams; and a diffraction grating provided between the light emitter/detector and the optical disc to split the laser light emitted from the light emitter/detector into at least three beams(Fig.1 , element 3; See column 8, lines 25-30);a light converging optical system provided between the diffraction grating and optical disc to converge the lights split by the diffraction grating to the recording surface of the optical disc (Fig. 1, element 5; See column 10, lines 15-20); wherein the diffraction grating having formed therein a plurality of slits whose depth is selected so that the efficiency of diffraction of first-order light when the first light beam is incident upon the diffraction grating is higher than that when the second light beam is incident upon the diffraction grating (Fig.2 ; See column 8, lines 40-55), except that a housing which receives the first and second light sources and a photodetector which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element placed on an opening of the housing; wherein the diffraction grating is disposed on one surface of the optical element. However, Brazas, Jr. et al. teaches that a housing which receives the first and second light sources (Fig. 11, elements 40, 40a; See column 6, lines 55-60) and a photodetector (Fig. 11, element 68; See column 7, lines 1-6) which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element (Fig. 9, elements 42a; See column 6, lines 55-60) placed on an opening of the

housing; wherein the diffraction grating (Fig. 9, elements 42; See column 6, lines 55-60)is disposed on one surface of the optical element. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide Mori et al. with the housing and the optical element as taught by Brazas, Jr. et al. The rationale is as follows: one of ordinary skill in the art at the time of the invention would have been motivated to provide Mori et al. with with the housing and the optical element as taught by Brazas, Jr. et al., in order to receive the first and second light sources and to detect at least a tracking error signal based on a return light component of the laser light reflected at the optical disc.

With regard to claims 27-29, Mori et al. shows all the features as described in claim 27, except that a housing which receives the first and second light sources and a photodetector which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element placed on an opening of the housing; wherein the diffraction grating is disposed on one surface of the optical element. However, Brazas, Jr. et al. teaches that a housing which receives the first and second light sources (Fig. 11, elements 40, 40a; See column 6, lines 55-60) and a photodetector (Fig. 11, element 68; See column 7, lines 1-6) which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element (Fig. 9, elements 42a; See column 6, lines 55-60) placed on an opening of the housing; wherein the diffraction grating (Fig. 9, elements 42; See column 6, lines 55-60)is disposed on one surface of the optical element. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide Mori et al. with the housing and the optical element as taught by Brazas, Jr. et al. The rationale is as follows: one of ordinary skill in the art at the time of the invention

would have been motivated to provide Mori et al. with with the housing and the optical element as taught by Brazas, Jr. et al., in order to receive the first and second light sources and to detect at least a tracking error signal based on a return light component of the laser light reflected at the optical disc.

With regard to claims 5 , 11, 17 and 23, Mori et al. shows all the features as described in claim 5, except that a housing which receives the first and second light sources and a photodetector which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element placed on an opening of the housing; wherein the diffraction grating is disposed on one surface of the optical element. However, Brazas, Jr. et al. teaches that a housing which receives the first and second light sources (Fig. 11, elements 40, 40a; See column 6, lines 55-60) and a photodetector (Fig. 11, element 68; See column 7, lines 1-6) which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element (Fig. 9, elements 42a; See column 6, lines 55-60) placed on an opening of the housing; wherein the diffraction grating (Fig. 9, elements 42; See column 6, lines 55-60)is disposed on one surface of the optical element. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide Mori et al. with the housing and the optical element as taught by Brazas, Jr. et al. The rationale is as follows: one of ordinary skill in the art at the time of the invention would have been motivated to provide Mori et al. with with the housing and the optical element as taught by Brazas, Jr. et al., in order to receive the first and second light sources and to detect at least a tracking error signal based on a return light component of the laser light reflected at the optical disc.

With regard to claims 6,12, 18 and 24, Mori et al. shows all the features as described in claim 6, except a housing which receives the first and second light sources and a photodetector which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element placed on an opening of the housing; wherein the diffraction grating is disposed on one surface of the optical element and the optical element has a holographic element disposed on another surface thereof so that the return light component is guided to the photodetector. However, Brazas, Jr. et al. teaches that a housing which receives the first and second light sources (Fig. 11, elements 40, 40a; See column 6, lines 55-60) and a photodetector (Fig. 11, element 68; See column 7, lines 1-6) which detects at least a tracking error signal based on a return light component of the laser light reflected at the optical disc; and an optical element (Fig. 9, elements 42a; See column 6, lines 55-60) placed on an opening of the housing; wherein the diffraction grating (Fig. 9, elements 42; See column 6, lines 55-60)is disposed on one surface of the optical element. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide Mori et al. with the housing and the optical element as taught by Brazas, Jr. et al. The rationale is as follows: one of ordinary skill in the art at the time of the invention would have been motivated to provide Mori et al. with with the housing and the optical element as taught by Brazas, Jr. et al., in order to receive the first and second light sources and to detect at least a tracking error signal based on a return light component of the laser light reflected at the optical disc.

Conclusion

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Point of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimlien Le whose telephone number is 703 305 3498. The examiner can normally be reached on M-F 8a.m-5p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on 703 305 6137. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9314 for regular communications and 703 872 9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305 3900.

NABIL HINDI
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